



**Euro-CASE**

THE EUROPEAN COUNCIL OF  
ACADEMIES OF APPLIED SCIENCES,  
TECHNOLOGIES AND ENGINEERING

# **ANNUAL REPORT 2015**



# A hub of collective intelligence



## Euro-CASE

The European Council of Academies of Applied Sciences, Technologies and Engineering is an independent non-profit organization of national academies of applied sciences, technologies and engineering representing 22 European countries,

Euro-CASE acts as a permanent forum for exchange and consultation between European institutions, industry and research.

Through its affiliated academies, Euro-CASE has access to top expertise (about 6 000 of Europe's most eminent engineers and technologists), and provides impartial, independent and balanced advice on technological issues with a clear European dimension to European institutions, national Governments, companies and organizations.

Since March 2015, Euro-CASE became a member of a European Consortium bringing together five sister networks: AE (Academia Europaea), ALLEA (All European Academies), EASAC (European Academies Science Advisory Council), Euro-CASE and FEAM (Federation of European Academies of Medicine). This Consortium represents about 100 Academies in Europe, which together elect roughly 10 000 Fellows in all disciplines, ranging from social sciences and humanities, across fundamental sciences and technology, to medical sciences.



## Vision 2020

**“Euro-CASE will be the voice of European excellence in Engineering, Applied Sciences and Technology for the world”**

The full text of the Vision 2020 can be found on the Euro-CASE website: [www.euro-case.org](http://www.euro-case.org)

## Message from the Chairman

We are looking back at yet another successful year in bringing the expertise of our Fellows closer to the European institutions. In this regard, I very much welcomed the proposal of the European Commission President, Jean-Claude Juncker, to closely involve European Academies, through their networks, as a source of scientific evidence and knowledge in the European Commission's new Scientific Advice Mechanism (SAM).

The SAM is also a good opportunity for our Platforms to propose topics of mutual interest. I am therefore very pleased that the Innovation Platform will enter a new phase in 2016. After presenting a summary paper on European Innovation Policy in 2015 that reflected the results of a series of six workshops, the Platform will now deal with questions of the future of industrialisation in Europe. The new Platform will be chaired by our colleague Bertrand van Ee, President of the Netherlands Academy of Technology and Innovation (AcTI) and Chairman of the EIT's Climate-KIC. He takes over from Björn Nilsson, President of IVA, whom I would like to thank very much for his engagement over the past two years.

The Energy Platform will continue its excellent work in two working sub-groups; the first one will be more technology oriented, under the co-chairmanship of Bo Normark (IVA) and Bernard Tardieu (NATF), and the second one, more climate change oriented, will be chaired by Ottmar Edenhofer (acatech).

I am also very content to have witnessed the recent launch of the Euro-CASE Bio-economy Platform, under the leadership of Bruno Jarry (NATF). 11 academies have already nominated their representatives to this Platform and it is expected that more will join at a later stage. The Platform's goals are to review the progress of the Bio-economy in the European member states, identify limitations to its development, and formulate recommendations which could be useful for overcoming them.

The Platform on Engineering Education also continued and held an international workshop that took place in Prague, on May 28, 2015.

In the context of our cooperation agreement with the Joint Research Centre, Euro-CASE jointly organized a Round Table on "Digital Privacy: Citizens' Rights in the Light of New Technologies and Commercial Needs".



Reinhard F. Hüttel, Chairman of Euro-CASE

More than 100 participants attended this event, which was focused on a growing concern of European citizens with respect to the assurance of data security on the Internet and the assertion of privacy in digital affairs.

The latest Euro-CASE Annual Conference was organised by our colleagues from AcTI and took place on November 2, 2015 in Delft, under the theme "Engineering Smart Cities of the Future". The conference addressed the issues related to technology and innovation and their influence on the development of smart cities. This excellent event confirmed Euro-CASE's commitment to further encourage discussions and provide policy options on important European topics such as technological innovation and digitalization.

2016 will mark a turning point in our provision of evidence-based policy advice to the European Commission. With the implementation of the new Science Advice Mechanism, the Commission gave Academies a dedicated role in the EU system of policy advice. It is a window of opportunity that has never been provided before. Together with you, I am very much looking forward to embracing these new opportunities.

**Reinhard F. Hüttel, Chairman**



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## Euro-CASE ANNUAL CONFERENCES

**Beginning in 2008, Euro-CASE member Academies have organised a series of Annual Conferences:**

**2008 London:** "How Can Europe Meet its 2020 Renewables Targets?" [RAEng];

**2009 Stockholm:** "Increasing the interest in Mathematics, Science and Technology" [IVA];

**2010 Berlin:** "Innovation - Best Practices" [acatech];

**2011 Madrid:** "Water and Food Security in Europe" [RAI];

**2012 Paris:** "Energy Independence for Europe" [NATF];

**2013 Lisbon:** "Boosting Innovation in Europe" [PAE].

**2014 Brussels:** "Evidence-based Policy Advice and Innovation Policy beyond Horizon 2020" [acatech, ARB, IVA]

**2015 Delft:** "Engineering Smart Cities of the Future" [AcTI].

# 2015 ANNUAL CONFERENCE

## Engineering Smart Cities of the Future

November 2, Delft

The Conference, hosted by the Netherlands Academy of Technology and Innovation (AcTI) on November 2, asked what influence engineering, technology and innovation is having and will have on the development of smart cities. The focus was on finding, developing and realising new, better and more exciting solutions for our future cities. This requires a dynamic interaction of vision, public administration and implementation by innovative companies.

There are various ways to define smart cities but in general they share common features: smart cities are cities populated by people living in an environment that is highly connected and driven by technology. Therefore, their three basic ingredients are: City + People + Technology, each with its own pace of change and development.

The city itself, the built environment and infrastructure, changes very slowly and often with major investment costs. The heritage of cities however often provides the city's charm and attractiveness.

Information technologies and their use develop very rapidly thus causing major changes to society.



Bertrand van Ee

People's behavioural patterns adapt and change faster than the physical environment, but then again slower than information technologies. There exists a generation of young pioneers who embrace technology, a generation that individualises the society and democratises its environment by giving it more direction and expressiveness. And there is an older generation, slower at adapting to technologies, which is attracted by the culture and social interactivity of the city. In a smart city, creativity therefore flourishes.

The theme of the Conference was elaborated in cooperation with member academies of Euro-CASE and the European Knowledge and Innovation Communities: Climate-KIC, EIT Digital, InnoEnergy and Health, all part of the European Institute of Innovation and Technology (EIT).

Within the general conference theme, the challenges facing smart cities of the future were divided into three major topic areas:

### 1. Vision and general framework

How to translate long term visions for smart cities into reality: what general framework is needed, and what adaptations in administration, rules and regulations are needed to make it happen? And of even greater importance, how are creativity, entrepreneurship and local initiatives stimulated and supported?



B. van Ee, D. Pavia, W. Jinker and M. Bicker Caarten [Moderator]



## 2. Engineering challenges

How to address engineering challenges lying ahead in the field of sustainable transport and logistics, energy, water and wastewater systems, food production, health and well-being, and how are they related?

## 3. Liveability and attractiveness

How engineering solutions relate to the liveability, the human scale and the needs and wishes of people living in the city? Also, what makes a city attractive and a great place to live?

The video of the entire conference with presentations can be found on the Euro-CASE website:  
[www.euro-case.org/index.php/annual-conference/annual-conference-2015.html](http://www.euro-case.org/index.php/annual-conference/annual-conference-2015.html)



Participants listening to the Conference-dinner speech by  
 Ms. Professor J. van Dijck, President of KNAW

# 2016 Annual Conference

## Big Data – Smarter Products, Better Societies

15-16 November, Lyngby [Denmark]



The Euro-CASE Annual Conference 2016 is planned to take place in Lyngby, near Copenhagen, on November 14, 2016. It will be organized by the Danish Academy of Technical Sciences (ATV) and its main topic will be “Big Data – Smarter Products, Better Societies”.

The conference will offer a forum for discussions of the opportunities and challenges provided by the use of

Big Data. The 2016 conference will include a number of keynote presentations by distinguished international speakers as well as three theme-specific tracks, where scholars and industrial leaders will be invited to present solutions and challenges:

- Big Data and the industrial “Internet of Things”.
- Big Data – a backbone in “Smart Societies”.
- Big Data – new opportunities in “Health”.

# Frontiers of Engineering



**TAF**

TECHNOLOGY  
ACADEMY  
FINLAND

## 2016/2017 cycle

EU-US FOE aims to bring together outstanding, early-career European and American engineers from industry, universities, and other research institutions to introduce their areas of engineering research and technical work, thereby facilitating an interdisciplinary transfer of knowledge and methodology that could eventually lead to collaborative networks of engineers.

The total number of participants, including organizers, speakers, and other participants, numbers approximately 60, with 30 engineers from the EU and 30 from the US. Participation is by invitation only; European attendees are nominated by Euro-CASE member academies.

The US National Academy of Engineering (NAE) has partnered with Euro-CASE in this activity since 2010.

The next EU-US FOE will be held October 16-18, 2016, in Finland, with the Technology Academy Finland (TAF) assuming the organisational role for the EU/Euro-CASE side. Chris Floudas, Princeton University Professor, will continue as the US co-chair of the organizing committee, and Harri Kulmala, TAF member and Chief Executive Officer of the Finnish Metals and Engineering Competence Cluster in Tampere, Finland, will serve as the EU co-chair, on behalf of Euro-CASE. During the 2-1/2 days of the symposium, four topics will be covered:

- Intelligent Transportation Systems, including automated vehicles, logistics & traffic systems, public transport networks, mobile work machines and work sites, robot equipment.
- Information and Computer Technologies for Personal Health, including topics related to Smart Health.
- Carbon Capture, Utilization and Storage.
- Integrated Photonics Manufacturing.

More information on FOE programs can be found on the NAE website:

[www.naefrontiers.org/Symposia/EU-USFOE.aspx](http://www.naefrontiers.org/Symposia/EU-USFOE.aspx)

## Euro-CASE Platforms

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**Euro-CASE Platforms are organised as working groups where various academies' representatives consider a specific topic and produce reports, which are often transmitted to the appropriate authorities in various European institutions, and may become a basis for further interactions with them.**



## Innovation



The opening meeting of the newly extended “Euro-CASE Innovation Platform” will be held in Stockholm on January 12-13, 2016, starting with a dinner on January 12, with the meeting on January 13. This Platform meeting will be chaired by Bertrand van Ee, President of AcTI, and hosted by Bjorn O. Nilsson, President of IVA. By the Board’s approval in December 2014, Bertrand van Ee will take over from Björn Nilsson as Chair of this Platform for the next 2 years.

## Energy



Almost all Euro-CASE member academies are working on the topic of energy which remains of utmost importance, especially in view of the proposed EU climate targets put forward by the European Commission in January 2014 to reduce EU domestic greenhouse gas emissions to 40% below 1990 levels, and to increase the share of renewable energy to at least 27% of the EU’s energy consumption by 2030. At the same time a well-designed European market for energy is also crucial for guaranteeing safe, sustain-

able and affordable energy for Europe’s consumers and industries.

Until June 2015, Euro-CASE Energy Platform was co-chaired by Ottmar Edenhofer, acatech, Germany, Bernard Tardieu, NATF, France and Bo Normark, IVA, Sweden.

The Platform produced a major Position Paper related to the European Emissions Trading System (EU ETS), presented to the European Commission at the end of 2014 [www.euro-case.org/images/stories/pdf/position-paper/Euro-CASE-policy-paper-ETS-reform.pdf](http://www.euro-case.org/images/stories/pdf/position-paper/Euro-CASE-policy-paper-ETS-reform.pdf)

The central pillar of European climate policy, the EU ETS, is currently questioned in its ability to deliver its objectives as the allowance price is persistently low at around 7-8 € / tCO<sub>2</sub>. This low price may affect the long-term cost-effectiveness of the instrument by reducing the incentive for investment and deployment of low carbon technologies. Consequently, no significant increase in the EU ETS allowance price is expected before 2020, and probably beyond, without reform. While the reasons for the price decline are controversial, empirical analysis shows that only a small proportion of price fluctuations can be explained by factors such as the economic crisis, renewable deployment or international offsets. Therefore, it is likely that political factors and regulatory uncertainty have played a key role in the price decline. As a consequence, any reform of the EU ETS has to deliver a mechanism that reduces such uncertainty and stabilizes expectations of market participants. The Market Stability Reserve as proposed by the EU Commission is unlikely to address the problem of the low price, and the uncertainty of future price devel-



Two generations of engineers involved in testing an innovative device

opment remains substantial. The ability of the Market Stability Reserve to deliver long-term cost-effectiveness is thus questionable.

The key element of the alternative reform proposal by Euro-CASE is to set a price collar in the EU ETS with lower and upper boundaries. This is likely to reinforce the long-term credibility and reliability of the price signal. In addition, a price for the GHG emissions not covered by the EU ETS has to be set. If additional market failures prevent the market from functioning efficiently, specific policy instruments related to innovation and technology diffusion should be implemented in addition to carbon pricing. Carbon leakage could be addressed through tailor-made trade policies. In parallel, increasing the coalition of countries included in carbon pricing should remain a priority. This reform package would bring the EU ETS back to life. At the same time, it would avoid a relapse into national climate and energy policies across Europe, which could result in much higher costs and inefficiencies.

For 2016-2018 the Energy Platform will be split into two working groups: one related to “Technologies”, will operate under the co-chairmanship of Bo Normark and Bernard Tardieu, and the other, oriented toward “Climate”, will be led by Ottmar Edenhofer.

## Engineering Education



The first Platform on Engineering Education came to an end in 2011. Its Final Report summarized results of the 23 questionnaires filled in by the member academies. In May 2013, Euro-CASE Board re-established this Platform chaired by Petr Zuna (EACR).

General objectives of this Platform currently are:

- Present state and future of engineering education (necessary transformations, structure, social status).
- How to increase the interest of the young generation and parents in engineering education?
- Placement in industry during young engineers' university education.

An International workshop on “Engineering Education” took place in Prague on May 28, 2015. It was attended by about 25 participants. The final programme with presentations and main points of discussion are available on: [www.euro-case.org/index.php/activites/item/21-engineering-education.html](http://www.euro-case.org/index.php/activites/item/21-engineering-education.html)



Workshop in Prague

## Bio-Economy



The definition of bio-economy relates to the sustainable production of biomass (plants, trees, algae, organic waste) and its transformation into a range of products for human food, animal feed, chemistry, materials and for energy production. The Bio-economy concept makes it possible to by-pass the wrongly autonomous character of the non-food uses to include all the complementarities and concurrences between the food, chemistry and energy systems, all three based on biomass as a raw material.

The OECD, in a recent report, described the bio-economy as one of the next frontiers in technological innovation which should thrive enormously during the next 30 years. During the same period many countries, including several EU Member states (Germany, the Netherlands, UK and the Nordic countries), have published their own charters defining their national industrial and scientific strategy in the broad bio-economy field.

The bio-economy is one of the important programs for Europe's future. The European Commission had already issued its own report in 2012, and has devoted a lot of time and effort during the last 5 years to promoting bio-economy, including through building a special line in the Horizon 2020 budget for R&D and innovation projects in this field. In addition to the Science, Technology and Innovation Directorate, other parts of the Commission are also involved in structuring this field which could become an important factor for economic growth in Europe during the years to come.

The creation of the Bio-economy Platform inside Euro-CASE was formally approved during the Euro-CASE Board meeting on November 3, 2015. 11 academies have already nominated their representatives to the Platform. It is expected that a few more will join at a later stage. The Platform has been launched under the leadership of Bruno Jarry, NATF (FR).

The Platform's goal is to review progresses of Bio-economy inside the European member states, identify limitations to its development and propose to the Euro-CASE Board recommendations which could be useful for overcoming them.

Meetings with the Commission indicated that it is strongly in need of advice on the limitations of the present policies, its interlocutors being most of the time either researchers with a limited view of the big picture, or companies with very specific demands.

On February 4, 2016, a kick-off Platform meeting should take place in acatech's office in Brussels.





## Major interactions of Euro-CASE with various European institutions, organizations and other international activities

For many years, Euro-CASE has efficiently interacted with the European Commission and the European Parliament. Its voice has now been recognized as the leading voice of engineering and technical sciences for European political institutions. This recognition led the European Commission to include Euro-CASE, along with four other partner organizations, into a Consortium invited to provide independent, science- and evidence-based policy advice. The present motto of the Commission, which has set up SAM (Science Advice Mechanism), is: “Science for Policy” and not “Policy for Science”.

Euro-CASE has pursued close relations with the Joint Research Center (JRC) of the European Commission, on the basis of their Memorandum of Understanding signed in 2012. A meeting jointly organized on “Digital Privacy” was considered a great success. Euro-CASE Fellows have also actively participated in a “Science meets Parliament Day”, an event organized by JRC, which brought together scientists, technologists and Members of the European Parliament to discuss issues of interest in establishing European laws, directives and policies.

International interactions of Euro-CASE are not only limited to Europe as witnesses its participation in CAETS (Council of Academies of Engineering and Technical Sciences).

How to strengthen the role of excellent science in the EU policy making was a topic of a meeting organized by the European Risk Forum to which Euro-CASE was invited to express its views and recommendations.

All these points are developed in more details in the chapters which follow.



## SAM: Scientific Advice Mechanism:

Academia Europaea, ALLEA, EASAC, Euro-CASE and FEAM are joining forces to provide independent scientific expert advice for policy making in Europe



R. F. Hüttel, D. Kelleher, G. Stock, R.-J. Smits,  
J. van der Meer, S. Cloetingh

On March 26, 2015, in presence of the Director-General of DG Research and Innovation, Robert-Jan Smits, Presidents of five European academy organisations (AE-Academia Europaea, ALLEA-the Pan-European Academy of Humanities, Letters and Sciences, EASAC-European Academies' Science Advisory Council, Euro-CASE and FEAM-Federation of European Academies of Medicine) met in Berlin to sign a Memorandum of Understanding (MoU) to strengthen inter-academy cooperation in Europe. Together, these networks represent more than 100 Academies across Europe with some 10,000 eminent scientific experts.

The European Commission strongly welcomed this initiative. It decided to open a new chapter in independent scientific advice for its policy-making activities when Jean-Claude Juncker and Carlos Moedas, following the expiration of the mandate of Anne Glover as Chief Scientific Adviser, announced the Scientific Advice Mechanism (SAM) in May 2015. The central goal of the SAM is to support the Commission with high quality, timely and independent scientific advice for its policy-making activities. By explicitly including the

Academies in its own pillar in the new mechanism, the European Commission established an innovative channel for a structured dialogue between the Academies across Europe and the Commission's authorities. The SAM project should, for the Commission, complement the in-house scientific services of the Joint Research Centre and existing specialized committees.

In October 2015, the European Commission formally launched a Scientific Advice Mechanism (SAM) Call, specifically addressed to the five above mentioned organisations.

A grant of €6 million over 4 years for European networks of academies and learned societies is included in the 2016 work programme within Horizon 2020. The grant will support academies to collaborate across Europe in providing science advice for policy.

At the same time, the Commission decided to set up a High Level Group (HLG), with the objective of interacting with the consortium of 5 networks of Academies. The HLG is composed of 7 brilliant scientists, selected following an open Call for nominations and recommendations from an independent identification committee. The following HLG members were chosen from 162 candidates proposed by 74 organisations:

- Janusz M. Bujnicki, Professor, Head of the Laboratory of Bioinformatics and Protein Engineering, International Institute of Molecular and Cell Biology, Warsaw
- Pearl Dykstra, Professor of Sociology, Erasmus University, Rotterdam
- Elvira Fortunato, Professor, Materials Science Department of the Faculty of Science and Technology, NOVA University, Lisbon
- Rolf-Dieter Heuer, Director-General, European Organization for Nuclear Research (CERN), Geneva
- Julia Slingo, Chief Scientist, Met Office, Exeter



Carlos Moedas

- Cédric Villani, Director, Henri Poincaré Institute, Paris
- Henrik C. Wegener, Executive Vice President, Chief Academic Officer and Provost, Technical University of Denmark

The group is well-balanced in terms of disciplinary expertise, gender and nationality. It is worth observing that two members of the HLG are members of Euro-CASE Academies and share a distinguished engineering and technology background: Professor Elvira Fortunato is a Fellow of the Portuguese Academy of Engineering (PAE) and Professor Henrik C. Wegener, is a Fellow of the Danish Academy for Technical Sciences (ATV). Furthermore, all other members of the HLG are members of other Academies in Europe.

The High Level Group will act as the interface between the Commission and the providers of scientific advice (Academies and learned societies, the wider scientific community and existing advisory bodies). Their main role is to oversee the process of providing high-quality, balanced, scientific advice to the European Commission. However, the innovative interaction between the European Commission, the HLG and the Academies will be a learning process.

The Scientific Advice Mechanism constitutes a huge opportunity for all Euro-CASE Academies. They can be part of a new historical collaboration between the Academies and decision makers on a European level and can take over more responsibility to support the new evidence-based policy advice process in order to reach better informed political decisions for the benefit of the citizens in Europe.

The consortium is presently working to answer the Call with specific Work Packages. The formal Grant Application, responding to the Call, should be ready in Spring 2016. It is foreseen that the SAM project starts in the 2nd semester of 2016.

#### European Commission

### European Commission hosted a conference on Data Protection Day Brussels, January 28, 2015

On January 28, 2015, the Joint Research Centre (JRC) organised, in close cooperation with Euro-CASE, a Round Table on “Digital Privacy: Citizens’ Rights in the Light of New Technologies and Commercial Need”. More than 100 participants attended this joint event which took place in the Berlaymont Building in Brussels. Trust, security and privacy on the Internet were central topics of the event.

The event was organised to address a growing concern of European citizens related to data protection, in particular, the assurance of data security on the Internet and the assertion of privacy in digital affairs. Especially, the commercial use of user information puts privacy to the test. For example, consumer behaviour, movement patterns and travel behaviour are collected and condensed into detailed digital profiles of individuals. The conference, held on European Data Protection Day, aimed to enrich the debate with contributions from the perspective of science, economics, society and politics.

The first part of the meeting was devoted to the business perspective and tensions between necessary data protection on the one hand, and the development of new services and business models on the other. In the second



Digital Privacy: R. Madelin, J. Lukasik, P. Rübig, V. Šucha

part, the participants of the Round Table discussed technical and political prospects for privacy and security on the Internet.

What are the challenges at the EU level? This question was at the centre of the closing discussion. The participants primarily focused on the completion of the Digital Single Market and on ensuring uniform regulations and minimum standards across the EU. Academy Fellows underlined the importance of simulators and living labs in order to better understand the relationship between technology and user behaviour.

The high-level conference was opened by Vladimír Šucha, Director-General of the Joint Research Centre and Jacques Lukasik, Secretary General of Euro-CASE and Fellow of the National Academy of Technologies of France. Their introduction was followed by key notes by Robert Madelin, Director-General for Communications Networks, Content and Technology, Paraskevi Michou, Acting Director-General for Justice and Consumers and Paul Rübig, Member of the European Parliament, Chairman of the European Parliament's Science and Technology Options Assessment (STOA) Panel.

In addition to the above personalities, other Members of Parliament and several Fellows from different Euro-CASE Academies contributed to the conference:

- Marju Lauristin, MEP
- Ivan Štefanec, MEP
- Claudia Eckert, Member of the Executive Board and Fellow of acatech
- Patrik Fältström, Fellow of IVA
- Erol Gelenbe, Fellow of NATF, PAN, HAS and the Turkish Science Academy
- Bernhard M. Hämmerli, Fellow of SATW
- Jean-Jacques Quisquater, Associated Fellow of ARB
- Christian Saguez, Fellow of NATF

The Conference was concluded by statements from Vladimír Šucha and Erol Gelenbe. Both highlighted the need for further interdisciplinary research in the area of digital privacy, especially a combination of technical and social sciences.

### **“Science meets Parliament”, Brussels, September 15, 2015**



To improve the culture of evidence-informed policy making, effective communication and regular exchanges between scientists and policy-makers are essential. Organised for the first time at the EU level, the “Science meets Parliament” event aimed to enhance existing relations between the two communities. Panel discussions focused on several major questions:

What do the EU policy-makers expect and need from scientists? How do we improve existing communication channels between these two communities? What are national Parliaments' expectations from European and national scientists? EU and national policy makers may have different expectations from EU science: how do EU science bodies react to their needs?

The event was co-organised by the Joint Research Center of the European Commission (JRC) and the Science and Technology Options Assessment (STOA) Office of the European Parliament. It brought together scientists from all over Europe with members of the European and national Parliaments. Three panels were organized



From left to right: F. W. Hesse; B. Nilsson, J. van der Meer; V. Šucha [moderator], P. Rübig, G. Stock; T. Digernes



with several high-level European personalities such as the EU Commissioners C. Moedas and T. Navracics, DG JRC V. Sucha, Vice President of the European Parliament, M. McGuinness and MEPs P. Rübig and J. Buzek.

Following the introductory statements by Tibor Navracics, Commissioner for Education, Culture, Youth and Sport, Carlos Moedas, Commissioner for Research, Science and Innovation, and others, representatives of national parliaments presented their expectations from European and national scientists. The panel “Science’s answer to the EU and national policy-makers’ expectations” in turn gave the floor to various scientific umbrella organizations, among them Euro-CASE, ALLEA and

EASAC to share their views on how science responds to EU policy-makers’ expectations. Björn Nilsson, member of the Euro-CASE Executive Committee, presented the experiences of Euro-CASE.

In the afternoon, panellists, among them Bruno Revellin-Falcoz, Member of the French Parliamentary Office for Scientific and Technological Assessment and Honorary President of NATF, and Julie Maxton, Executive Director of the Royal Society, discussed examples of best practices with “Science meets Parliaments” at national level. The event set the basis for greater and continued cooperation between the European scientific and policy-making community.

### International Council of Academies of Engineering and Technological Sciences [CAETS]: [www.caets.org](http://www.caets.org)



The 2015 Annual meeting took place on Oct. 12-15 in New Delhi and was organised by the National Academy of Engineering of India. Its main topic was “Pathways to Sustainability: Energy, Mobility and Healthcare Engineering”. Several member academies of Euro-CASE attended the meeting: acatech, AcTI, EA CR, HAE, IVA, NATF, NTV, RAEng, RAI and SATW.



CAETS 2015, India

It is planned that the Royal Academy of Engineering (UK) will organise the 2016 meeting in London, focusing on the « Role of Engineering in the Developing World ».

### Annual Conference of the Academy of Engineering Sciences of Serbia



Jacques Lukasik, Secretary General of Euro-CASE, was invited, in March 2015, to the Annual Meeting of the Serbian Academy of Engineering Sciences, the most recently admitted member of the Euro-CASE family.

In front of about 100 Fellows, he described Euro-CASE structure, current activities and its present strategy aimed at a greater visibility and recognition at the European level as a major player in providing European policy-makers with independent, evidence-based advice.

He also had an opportunity to meet with the Serbian Minister for Education, Science and Technology



J. Lukasik, S. Verbić

Development, Srdan Verbić, and discuss Euro-CASE’s approach to Engineering Education, a topic of great importance for Serbia.





Airbus Group–Euro–CASE Workshop on a future electrically powered aircraft

### Airbus Group–Euro–CASE Workshop on a future electrically powered aircraft



Environmental and climate change concerns are influencing the Airbus Group's long-term strategy. The Group has launched an ambitious project to define the path forward and select the breakthrough technologies needed for a low or zero-emission hybrid or fully electrical regional short- to medium-haul aircraft to be developed in the next 15 to 20 years. The aircraft is expected to be an 80- or 90-seater with autonomy of up to 3 hours and an operating range of up to 2500 km.

Euro-CASE was Airbus's partner in organising a 2 day exploratory workshop (June 30-July 1), near Munich, Germany, to identify the necessary key technologies and materials as well as their potential to reach the required performances for making the future e-aircraft a reality. The Euro-CASE Board had approved this partnership in its December 2, 2014 meeting in Brussels.

The workshop brought together 13 key-players in the Airbus Group R&D and 20 pertinent experts selected and nominated by Euro-CASE academies. This workshop was neither public nor confidential.

Major hurdles for building a fully electrically powered aircraft are the low energy density and voltage achievable by today's batteries and fuel cells, and the resistivity of copper cables at the high voltages needed for electrically driven thrust. Technologies in the following areas were recognised as key-enablers and their exploration during the workshop was therefore regarded as a priority:

- High temperature superconductivity, including for cables and generators.
- Energy storage density (batteries, fuel cells) on board (in-flight applications) and power management/distribution across large current/voltage scales
- Materials and technologies for power trains, including cables, energy/electricity storage, generators.

The list of participants and workshop conclusions can be found on the Euro-CASE website.

### A meeting of the European Risk Forum



As they seek to achieve this goal, regulators face challenges. They must balance excellence with impartiality, so as to ensure public acceptance without losing access to the best science. They must develop scientific advisory mechanisms for parliamentarians without challenging the legitimacy of the political process. They must recognise problems of bias, whilst also highlight-

ing conflicts of interest. They must recognise the rising 'value' of good science when making decisions based on hazard rather than risk.

An eminent panel of scientists, academics, senior EU officials and decision-makers addressed these issues and developed recommendations to strengthen the role of excellent science in EU decision-making in a December 1, 2015 meeting in Brussels. Jacques Lukasik was invited to present the Euro-CASE views on the above matters. It gave him the opportunity to describe the Scientific Advice Mechanism project launched by the European Commission.

# Member academies major events and achievements in 2015

More detailed information for each Academy can be found on their web sites.



## Belgium

[www.academieroyale.be](http://www.academieroyale.be)



## Croatia

[www.hatz.hr](http://www.hatz.hr)

- Organisation of events such as: Forums on "ICT in Industry and Education", "Electrical Brain Signals", a Round table on "New technologies for development of food production", and Sponsorship of Forum "Intelligent Transport Systems".
- In 2015, HATZ was sponsor and organiser of more than 20 scientific and expert events.
- Cooperation with Croatian Academy of Sciences and Arts and The Miroslav Krleža Institute of Lexicography in publishing the "Croatian Technical Encyclopaedia".
- Publishing "Twenty years of the Croatian Academy of Engineering (HATZ) 1993-2013".



## Czech Republic

[www.eacr.cz](http://www.eacr.cz)

- Energy: organization of a Workshop, "Blackouts and the Renewable sources of Energy", in response to the pressing problem of the dynamic stability of the electrical transmission network with a high proportion of renewable sources, reviewing technical means of dealing with this problem.
- Engineering Education: organization of an International Workshop, "Engineering Education", within the framework of the Euro-CASE Platform. The workshop was focused on innovative issues in the Engineering Education to increase interest of students towards technical disciplines.
- Annual Prize of the Engineering Academy 2014: this award, promoting outstanding results of Engineering in the Czech Republic, was presented to a team of designers of a new bridge over the river Vltava in Prague, for a unique concept of a bridge construction consisting of a steel arch and a pre-stressed concrete deck connected together by a net of suspensions.



## Denmark

[www.atv.dk](http://www.atv.dk)

- "Advanced Materials Technology as a Driver for Innovation and Growth": With funding from the Danish Agency for Science, Technology and Innovation, ATV published a report with recommendations on how to improve industry-academia cooperation. Follow-up meetings with businesses are scheduled for 2016.

- ATV's Technology Day: in November 2015, ATV held its first ever Technology Day, a conference with focus on technological development and how to apply new technologies. The conference featured international key note speakers from Volkswagen, Novozymes, and Harvard Business School as well as three parallel sessions related to Big Data, robotization and sustainable technology.
- "Educational Needs in the Knowledge-based Manufacturing Industry": ATV kick-started this project with a number of Round table discussions in 2015. A report on this topic, with recommendations for companies and educational institutions, will be published in 2016.



## Finland

[www.technologyacademy.fi](http://www.technologyacademy.fi)

- Technology Days: a science event intended for the general public was organised for the fifth time. It took place in four cities with schoolchildren as the target audience. The theme of the 2015 event "Information Light" was related to Big Data, the specialism of the 2014 Millennium Technology Prize winner Stuart Parkin. The aim of Technology Days is to incite young people to choose a technology career and to encourage discussion on the role of technology in society.
- For the 2015 Millennium Technology Prize, worth 1 M€, TAF received a record number of 79 innovations involving 114 nominees. The largest number of nominations was in material and process technologies, followed by health technologies and biomedicine. Geographically, USA and Europe again dominated proposals.
- TAF, following a proven concept which has been developed by IVA in Sweden, launched a new initiative called "Technology Leap" ("Teknoloikka" in Finnish). The aim is to incite and encourage young people to choose a technology career. Practical actions include an internship for young people (19-22 years of age) in companies as well as communication on their experiences in mass media, social media and in the form of visits to schools.



## France

[www.academie-technologies.fr](http://www.academie-technologies.fr)

- Four national academies, in Germany, acatech and Leopoldina, and in France, Academy of sciences and Academy of technologies, have gathered researchers and experts to work on "Energy Transition" during two workshops. Sharing of different approaches by Germany and France to the evolution of energy systems and anticipation of challenges to come were main motivations. The two countries have also identified fields of further scientific collaboration.

- NATF organized a public meeting on “Connected Objects: the 3rd Digital Revolution”, with about 180 participants. Round Tables included start-up founders, think tank leaders and public institutions’ personalities.
- Invited by the French government, NATF established a priority list of “Horizon 2020 Key Technologies as a Function of Market Needs”: Energy, Environment, Mobility, Leisure and Culture, Security, Housing, Health, Nutrition and Telecommunication.
- NATF actively participated in the founding and establishing in 2015 of the Algerian Academy of Sciences and Technologies.



### Germany

[www.acatech.de](http://www.acatech.de)

- 2015 “Innovation Dialogue” with Chancellor Angela Merkel and high-ranking representatives from business, science and society, coordinated by acatech, was dedicated to “Digital ecosystems and the future of value creation in the German economy” and to “The potential of human-machine interaction for innovation”.
- The project “Energy Systems of the Future” managed by acatech in cooperation with the National Academy of Sciences Leopoldina and the Union of the German Academies of Sciences and Humanities aims to support the restructuring of the energy supply system in Germany. The project brings together more than 100 renowned scholars from numerous disciplines who develop policy options providing a foundation for a broad societal discourse conducted by the “Research Forum Energiewende”.
- In 2015, acatech and the Federation of German Industries (BDI), published, for the first time jointly, the “Innovation Indicator”. The study compares the innovation performance of 35 leading industrialized countries and emerging economies and formulates recommendations on how to improve Germany’s competitiveness.



### Greece

[portal.tee.gr/portal/page/portal/INTER\\_RELATIONS/english/role](http://portal.tee.gr/portal/page/portal/INTER_RELATIONS/english/role)



### Hungary

[www.mernokakademia.hu](http://www.mernokakademia.hu)

- In 2015, HAE organized two conferences, one on “Improving Surface Transport” and the other on “Materials Testing Failure Analysis - Experiences from Best Practices”.
- During HAE’s General Assembly, Prof. János Józsa, Rector of the Budapest University of Technology and Economics, presented a lecture on “Forecast and Modelling of Nature and Industrial Disasters/ Catastrophes”, which was followed by vivid professional discussions.
- Several statements have been prepared by HAE on such topics as “Updating Technics of Engineering Education”, “Re-organization of Higher Education” and “Suppliers of Structural Elements for Nuclear Power Plants”.



### Ireland

[www.iae.ie](http://www.iae.ie)

IAE has produced several responses and statements requested by Irish Government and institutional authorities:

- Response to the Department of Jobs, Enterprise and Innovation Action Plan for Jobs 2016 proposing the establishment of centres of excellence for research and skills training, and recommending improving universities/industry links.
- Response to the Department of Communications, Energy and Natural Resources Consultation Document on Ireland’s Renewable Electricity Support Scheme, recommending a cost effective approach, improved market regulation and cessation of subsidies issued.
- Response to the National Broadband Plan, within Ireland’s Broadband Intervention Strategy, recommending higher capacity speeds, a future proofed network and the state retention of strategic asset (network).
- Response to Irish Government’s Consultation Paper for Successor to National Strategy for Science Technology and Innovation.



### Italy

[www.fast.mi.it](http://www.fast.mi.it)



### Netherlands

[www.acti-nl.org](http://www.acti-nl.org)

- On November 2, 2015, the Netherlands Academy for Technology and Innovation (AcTI) hosted the 2015 Annual Conference of Euro-CASE. For this occasion, AcTI combined its Annual Innovation Conference and the Euro-CASE Annual Conference, extending it to a high level European Conference inspired by the grand societal challenges: “Engineering Smart Cities of the Future”. The Conference addressed the urgent need for innovation and entrepreneurship to meet the increasing urbanization of the world population in a dynamic, prosperous and sustainable way.
- The Conference was prepared by AcTI in cooperation with the member academies of Euro-CASE, and the European Knowledge and Innovation Communities Climate-KIC, EIT Digital, InnoEnergy and Health, all part of the European Institute of Innovation and Technology (EIT), together with the Wageningen University and Research Center.
- On the national level, the Euro-CASE Conference has been one of the events preparing the Netherlands for the presidency of the European Union during the first half of 2016. The Urban Agenda is one of the priorities of the Dutch Presidency, with sustainable urban transformation as one of the central issues.



### Norway

[www.ntva.no](http://www.ntva.no)

- NTVA celebrated in 2015 its 60th anniversary. The Academy was founded in Trondheim in 1955. After a modest start, it has developed into an organization of considerable size, with more than 550 individual members. The academy arranges every year about 40 meetings or seminars in 6 different cities. In 2015 NTVA organized seminars

in 4 cities to mark its anniversary, on education and research, and on the challenging situation resulting from the low oil price and falling investment activities in the oil and gas industry.

- NTVA published a book of 11 chapters with contributions from almost 20 different experts, most of them members of the Academy, on energy, technology and climate.
- Expanding meeting activities to new cities and a broader public: Norway is a country of long distances and a geographically distributed population and industry. The academy organizes 6-7 yearly meetings in the country's biggest cities. Through new forms of arrangements – meetings and seminars on university campuses etc. - the academy endeavours to get into contact with a broader public.



### Poland

[www.pan.pl](http://www.pan.pl)

- The Division IV, Engineering Sciences, of the Polish Academy of Sciences (PAN) organized or sponsored many international conferences, seminars and events, including: "VI Workshop on Physics and Technology of Semiconductor Lasers"; "Signal Processing Symposium", "Micro-technology and Thermal Problems in Electronics", "Dynamic Systems-Theory and Applications", "Continuous Media with Microstructure", "Smart Engineering of New Machines".
- In September, the Energy Conversion and Renewable Resources Research Center (KEZO) of the PAN, located in Jablonna (near Warsaw), was opened. The project has been co-financed by the European Union under the Regional Operational Program for the Mazovia Voivodship for the years 2008-2014. KEZO is a complex of the most modern laboratories in Poland, equipped with state-of-the-art devices.
- The KEZO Research Center complex will provide scientific and technological facilities for Mazovia and the north-eastern region of the country for the creation of Autonomous Energy Regions (ARE), which guarantee energy security.



### Portugal

[www.ordemengenheiros.pt](http://www.ordemengenheiros.pt)

- Tribute to Engineers: PAE promoted a special initiative to honour Portuguese engineers whose work is part of the Portuguese engineering collective memory through their outstanding achievements in different areas. With the cooperation of the Academy of History, their work will be perpetuated in a special PAE publication.
- PAE Prize: To promote engineering in recognition of its extraordinary value and service delivered to society, PAE is selecting Portuguese institutions and individuals to be distinguished by the PAE Prize to foster public awareness for the importance of engineering.
- Climate Change: Following COP21, PAE has promoted a discussion on climate change, envisaging future engineering solutions in contribution to CO2 reduction.



### Romania

[www.astr.ro](http://www.astr.ro)

- ASTR organized an international conference, "Days of Academy of Technical Sciences in Romania", focussed on "Companies' development through innovation", in the city of Galati, a heavily industrialized centre in the shipping industry, machine building and metallurgy. Reports presented and contacts established between specialists from industry and research led to the promotion of new knowledge and the preparation of future projects.
- ASTR also supported 15 various scientific national conferences.
- In order to attract young people to research, ASTR developed a series of events such as exhibitions of inventions and innovations for students. It also initiated a research program, funded by industrial companies, open to young researchers in Romania.
- ASTR members participated in European research programs and organised international events in Romania such as the Balkan Mining Congress, WEC-FOREN and International Conference on Communication.



### Serbia

[www.ains.rs](http://www.ains.rs)

- The General Assembly of AESS in March brought together more than 200 Academy members and esteemed guests. Serbian Minister for Education, Science and Technology Development, Srdan Verbic, addressed the audience. Jacques Lukasik, Euro-CASE Secretary General, acknowledging formal accession of AESS to Euro-CASE on January 1st 2015, presented its organization's activities and strategy.
- In May, a Joint Conference, within the Italian-Serbian Collaboration Platform, was organized by AESS on advanced manufacturing systems. Its aim was strengthening regional scientific cooperation between Italy and Serbia and fostering interaction with industry. The event gathered more than 250 participants.
- In June, a high level delegation of Chinese Academy of Engineering (CAE), led by Professor Xu Kuangdi, Honorary President of CAE, and Kang Jincheng, Director for International Cooperation of CAE, visited AESS. A Protocol on Cooperation between AESS and CAE has been signed in presence of the Chinese Ambassador in Serbia, HE Li Manchang.



### Slovenia

[www.ias.si](http://www.ias.si)

- "Slovenia Innovations Systems": IAS continued with activities on renewing the innovation process, following its statements "Slovenia Needs a New Vision for the Development of the Economy and Society". As a result, IAS organized in January a conference "Innovation Process in Slovenia". All presentations were published in the Conference Proceedings entitled "Slovenia Innovations Systems".
- "Energy in Slovenia Today and Tomorrow": from March to October 2014, four workshops were organized by the IAS Committee for Energy and Environment. They developed a "Position of the Slovenian



Academy of Engineering on the development of the Slovenian energy sector until 2030, with a view until 2050". A corresponding document was published on the IAS website.

- "Smart Specialization Strategy" (SSS): IAS members were also very active preparing new strategy for the development of the economy and society in the frame of the SSS "Actions and operations of all stakeholders must be aimed at a successful high value-added economy". A complete document is available on the IAS website.



### Spain

[www.raing.es](http://www.raing.es)

- RAI has organised more than 30 seminars, conferences and other events. Some of them deserve to be highlighted:
  - Opening session with the lecture "Chips in Mars".
  - Workshop "Health and Technology".
  - Presentation of the "Data Science & Engineering Consortium".
  - Seminar "A Milestone for the Spanish Aerospace Industry".
  - Round table "Engineering, Industry and Defence".
- Annual awards "Academiae Dilecta" and "Young Engineers" were bestowed, respectively, to a company with a significant relevance in engineering and technology and to young professionals with a special involvement in engineering.
- A "Prospective Platform for Energy and Innovation" was launched. It integrates a team of experts from industry, university and administration aiming to identify technological trends and developments that will impact the energy sector and will, eventually, create new business models.
- For one more year, RAI led "Generación", an initiative that fosters entrepreneurship based on technology, selecting and awarding five young companies. The core of their competitive difference is based on technological innovation.



### Sweden

[www.iva.se](http://www.iva.se)

- IVA is currently running 9 major projects, 6 of which are policy-advice projects, bringing together experts and stakeholders on various topics such as resource efficiency, energy and research policy. Other projects aim to develop tools for digital learning (NTA Digital); to attract students into higher education in engineering and science (Technology leap), and to promote entrepreneurship (Prince Daniel's Fellowship).
- More than 130 seminars and other outreach activities, open to the public, were arranged.
- IVA was represented at the CAETS and Euro-CASE Annual meetings, as well as at the AAAS (American Association for the Advancement of Science) Annual Conference.
- Several international delegations were received at IVA, the highlight being a lecture by the French Prime Minister Manuel Valls on September 18. 3 delegation trips were conducted abroad – the Electricity Crossroads project visited UK; the Attractiveness for Sustainable Growth project visited Germany (Bavaria); and the IVA Industrial Research Committee went to Bavaria and Baden-Württemberg in Germany.



### Switzerland

[www.satw.ch](http://www.satw.ch)

- An insufficient number of young people is interested in technical and engineering sciences. To this end, SATW organized a public workshop addressing the topic of extracurricular STEM-activities. In addition, seven TecDays were held. On these days, the students select various modules in the fields of technical and natural sciences.
- The danger of cyber espionage and interference can be no longer ignored. Switzerland lacks sufficient IT security professionals for protecting its IT infrastructure. SATW was co-organizer of the Swiss Cyber Storm Cyber Security Challenge 2015. Its aim is to mitigate the problem by offering a competitive, yet fun Platform for finding young cyber talents.
- SATW published its first foresight report (Technology Outlook) in March. It is addressed at decision makers in politics and industry, identifies technological advances of economic and societal relevance for Switzerland and lists the strengths of and opportunities for the workplace Switzerland.



### United Kingdom

[www.raeng.org.uk](http://www.raeng.org.uk)

- The UK government's Newton Fund is a £375m, 5 year fund aimed at developing science and innovation partnerships with 15 emerging powers globally. RAEng is one of eight delivery partners charged with bilateral programmes with partners in these countries: [www.raeng.org.uk/grants-and-prizes/international-research-and-collaborations/newton-fund-programmes/leaders-in-innovation-fellowships](http://www.raeng.org.uk/grants-and-prizes/international-research-and-collaborations/newton-fund-programmes/leaders-in-innovation-fellowships).
- RAEng's Africa Prize for Engineering Innovation, which aims to reward innovation and entrepreneurship in sub-Saharan Africa was awarded to its first winner in 2015, Dr Askwar Hilonga from Tanzania, whose innovative nano-filters are bringing safe and affordable clean drinking water to East Africa : [www.raeng.org.uk/africapize](http://www.raeng.org.uk/africapize)
- RAEng celebrated the launch of the Diversity Toolkit, developed with employers, for employers, providing ideas and guidance on building diversity in the engineering profession: [www.raeng.org.uk/policy/diversity-in-engineering/bis-programme/employers](http://www.raeng.org.uk/policy/diversity-in-engineering/bis-programme/employers)
- Academy President, Dame Ann Dowling, was asked by the Government to lead a review examining how the UK can support the development of more effective collaborations between businesses and university researchers in the UK. The Dowling Review highlighted a number of recommendations, and received a high level of interest from the UK research system and from interested stakeholders internationally: [www.raeng.org.uk/policy/dowling-review#sthash.4Qz7sOk9.dpuf](http://www.raeng.org.uk/policy/dowling-review#sthash.4Qz7sOk9.dpuf)

## Board representatives and Executive Committee



Euro-CASE Board meeting, Den Haag 03.11.2015

### Euro-CASE Executive Committee in 2015



**Jacques Lukasik** [NATF]  
Secretary General



**Reinhard F. Hüttel** [acatech]  
Chairman



**Sir William A. Wakeham** [RAEng]  
Treasurer



**Björn O. Nilsson** [IVA]



**Olavi Nevanlinna** [TAF]



**Petr Zuna** [EA CR]

Members of the Executive Committee are *ex officio* members of the Board. During 2015 Executive Committee met four times. The Board met once, on November 3 in The Hague, after the Annual Conference.

Due to the process of setting up of the SAM project, which official launching is foreseen most probably right after the summer 2016, the term of the current Executive Committee, formally ending in May 2016, was extended by the Board until the end of 2016. The election of the new Executive Committee will be held during the Board meeting in November 2016.

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